1. Find \( q(101,17) \) and \( r(101,17) \).

Sol. to 1: \( 5 \cdot 17 = 85 < 101 \), but \( 6 \cdot 17 = 102 \geq 101 \), so \( q(101,17) = 5 \) and \( r(101,17) = 101 - q(101,17) \cdot 17 = 101 - 5 \cdot 17 = 101 - 85 = 16 \).

Ans. to 1: \( q(101,17) = 5 \) and \( r(101,17) = 16 \).

Comment: Almost everyone got it right.

2. Use the clever way to find \( \text{Div}(210) \).

Sol. to 2: Using the algorithm of the Fundamental Theorem of Arithmetic

\[
210 = 2^1 \cdot 3^1 \cdot 5^1 \cdot 7^1
\]

So

\[
\text{Div}(210) = \{1, 2\} \cdot \{1, 3\} \cdot \{1, 5\} \cdot \{1, 7\}
\]

\[
\text{Div}(210) = (\{1, 2\} \cdot \{1, 3\}) \cdot (\{1, 5\} \cdot \{1, 7\})
\]

\[
= \{1 \cdot 1, 1 \cdot 3, 2 \cdot 1, 2 \cdot 3\} \cdot \{1 \cdot 1, 1 \cdot 7, 5 \cdot 1, 5 \cdot 7\}
\]

\[
= \{1, 2, 3, 6\} \cdot \{1, 5, 7, 35\}
\]

\[
= \{1 \cdot 1, 1 \cdot 5, 1 \cdot 7, 1 \cdot 35\}
\]

\[
2 \cdot 1, 2 \cdot 5, 2 \cdot 7, 2 \cdot 35
\]

\[
3 \cdot 1, 3 \cdot 5, 3 \cdot 7, 3 \cdot 35
\]

\[
6 \cdot 1, 6 \cdot 5, 6 \cdot 7, 6 \cdot 35
\]

\[
= \{1, 5, 7, 35\}
\]

\[
2, 10, 14, 70
\]

\[
3, 15, 21, 105
\]

\[
6, 30, 42, 210
\}

This is a correct answer, but it is polite to list the elements in increasing order. so a

Polite Answer to 2 is:

\[
\{1, 2, 3, 5, 6, 7, 10, 14, 15, 21, 30, 35, 42, 70, 105, 210\}
\]

Comment: About %60 got it right. It is a good idea to check by using the formula for the number of divisors

\[
|\text{Div}(n)| = \prod_{i=1}^{k} (a_i + 1)
\].
Here $k = 4$ and $a_1 = 1, a_2 = 1, a_3 = 1, a_4 = 1$, so

$$|\text{Div}(210)| = (1 + 1)(1 + 1)(1 + 1)(1 + 1) = 2^4 = 16$$

and indeed we got 16 elements in our answer.